

**Management Plan for  
Antarctic Specially Managed Area (ASPA) No. 121  
CAPE ROYDS, ROSS ISLAND**

**1 Description of values to be protected**

An area of about 300 m<sup>2</sup> at Cape Royds was originally designated in Recommendation VIII-4 (1975, SSSI No. 1) after a proposal by the United States of America on the grounds that it supports the most southerly established Adelie penguin (*Pygoscelis adeliae*) colony known. The Adelie penguin population at Cape Royds had declined from 1956 as a consequence of human interference during a period when heavy sea ice cover made the colony particularly susceptible to reduced recruitment. In 1963 United States and New Zealand authorities agreed to restrict activities and develop a management plan for the Area in order to protect the scientific values related to penguin research. The site was specially protected to allow the population to recover and protect on-going science programs. The population has recovered and now exceeds pre-1956 levels; since 1990 numbers have fluctuated between 2,500 and 4,500 pairs, primarily due to natural variation in local sea ice extent. The colony remains of high scientific and ecological value and as such merits continued long-term special protection, especially in view of ongoing visits to Cape Royds from nearby stations and tourist groups.

The original Area was enlarged in 1985 as a result of a proposal by New Zealand (Recommendation XIII-9) to include a 500 m-wide coastal strip to protect the seaward access and nearshore feeding ground of the Adelie penguins, as well as projected research on the Cape Royds inshore marine ecosystem. This coastal area of Cape Royds is a site of continuing studies on Nototheniid fish population structure and dynamics.

Shackleton's Hut (Historic Monument No. 15), located in ASPA No. 157 (Backdoor Bay), is located 170 meters to the northeast of the colony and together with the colony itself are attractions to these visitors. Regular and frequent visits to Cape Royds means that the Area could easily be damaged by human impact if not provided with adequate protection. The scientific and ecological values of the Area require long-term protection from possible adverse impacts associated with these activities.

The boundaries have been further extended in this plan to encompass the entire Adelie penguin colony. The new boundary extends farther north to include all of Pony Lake, and farther east to include the penguin nesting areas.

**2 Aims and objectives**

Management at Cape Royds aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;
- allow scientific research on the ecosystem, and in particular on the avifauna in the Area, while ensuring protection from disturbance;
- minimize the possibility of introduction of alien plants, animals and microbes into the Area;
- allow visits for management purposes in support of the aims of the management plan.

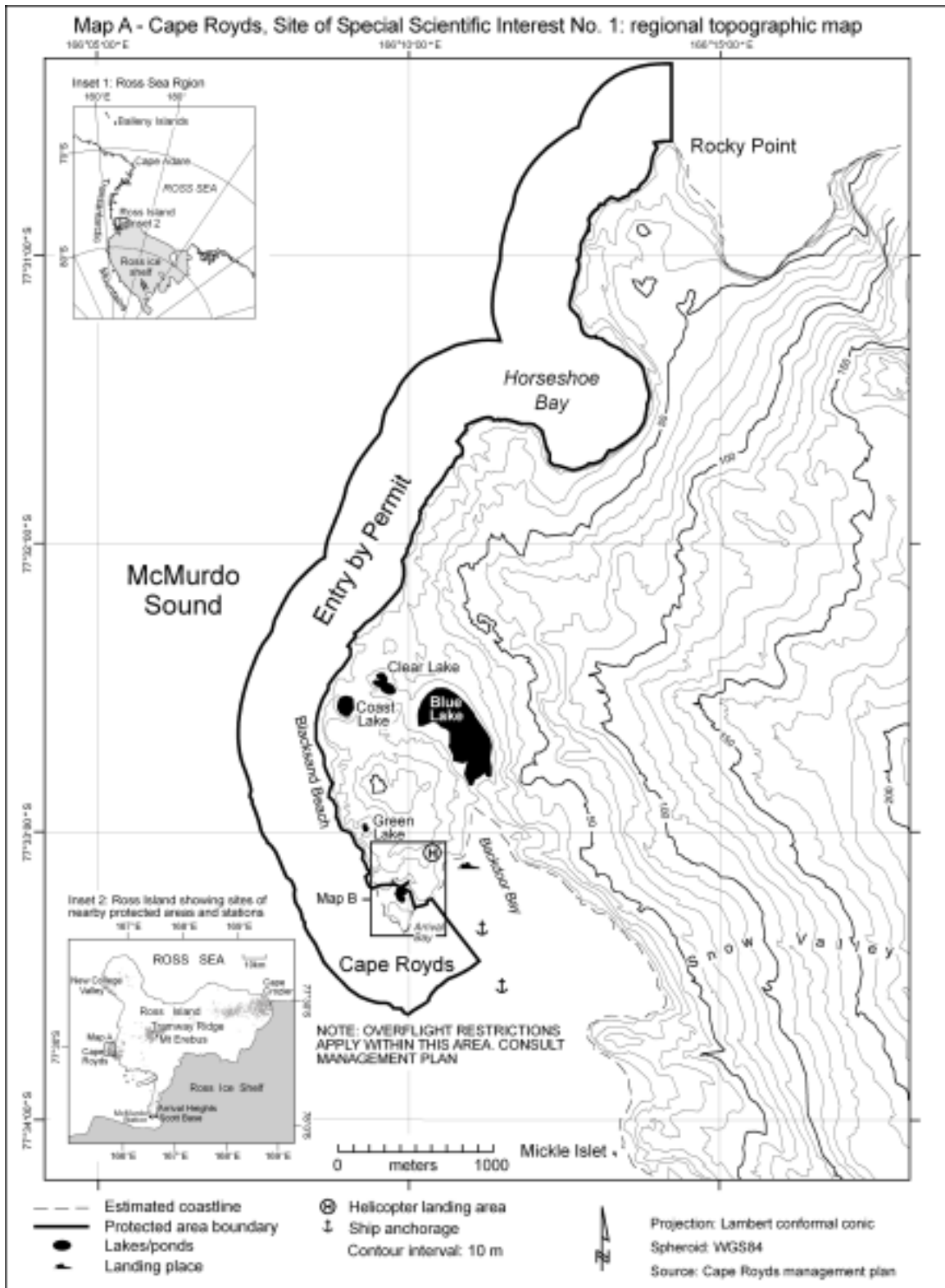
### **3 Management activities**

- Brightly colored markers, which should be clearly visible from the air and pose no significant threat to the environment, should be placed to mark the helicopter landing pads adjacent to the protected area (see maps).
- Signs illustrating the location and boundaries with clear statements of entry restrictions shall be placed at appropriate locations at the boundaries of the Area to help avoid inadvertent entry. In addition, flags should be placed on the sea-ice in Backdoor Bay along the southeast boundary of the marine area (offshore from Derrick Point) on the first visit over sea-ice each season to indicate the restricted area so those traveling to Cape Royds over sea ice are aware of the marine boundary of the Area. Flags placed shall be removed immediately prior to closure of sea-ice travel each season.
- Signs showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently, and a copy of this management plan shall be kept available, in all research hut facilities located at Cape Royds.
- Markers, signs or structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition, and removed when no longer necessary.
- Visits shall be made as necessary (no less than once every five years) to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.
- National Antarctic Programs operating in the region shall consult together with a view to ensuring these steps are carried out.

### **4 Period of designation**

Designated for an indefinite period.

**5 Maps and photographs**



Map A: Cape Royds regional topographic map.

The map is derived from digitized contours from NZ Lands and Survey Plan 37/108 (1982) combined with an orthophotograph using the following specifications:

Projection: Lambert conformal conic

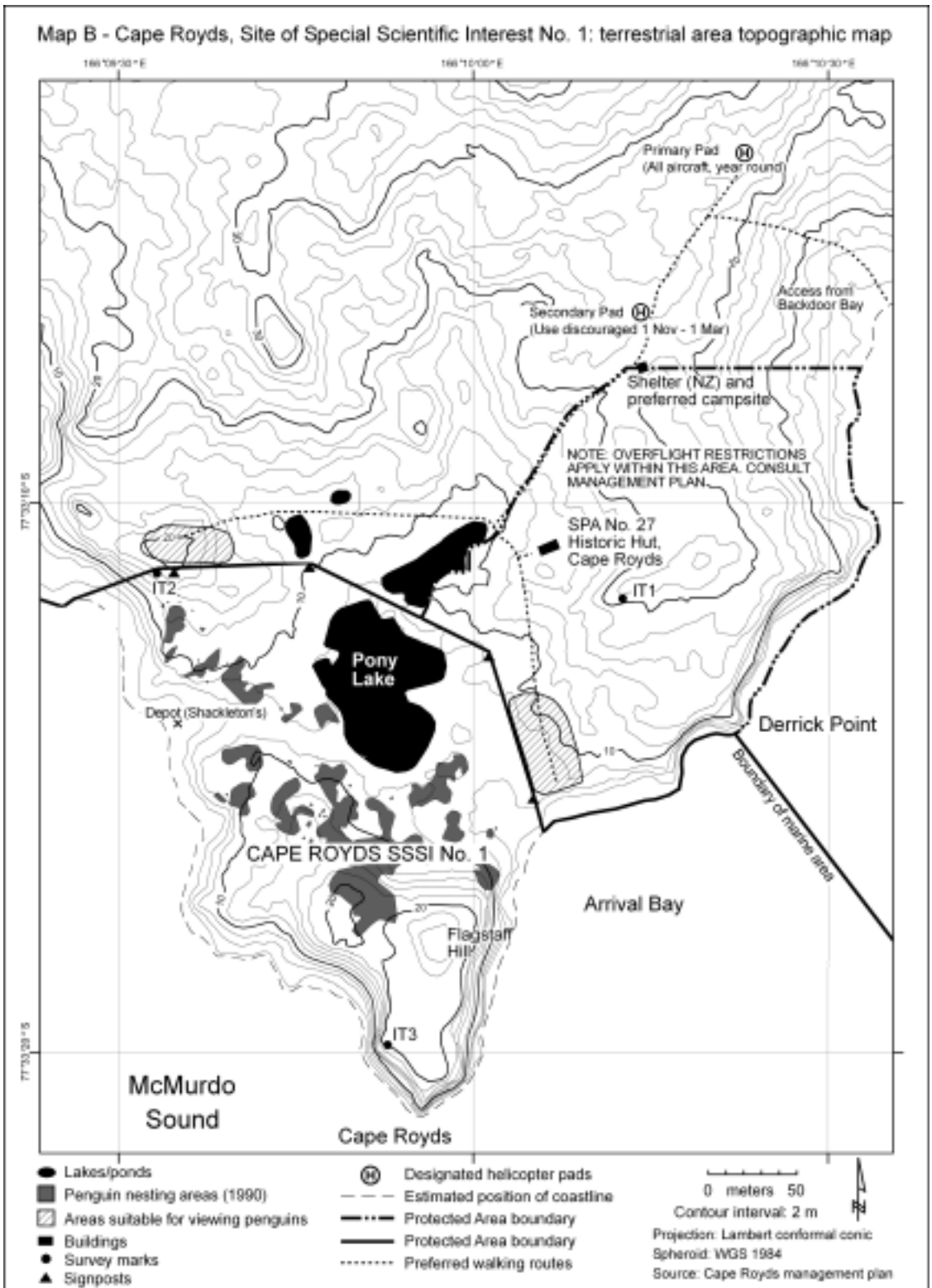
Standard parallels: 1st 76° 40' 00" S; 2nd 79° 20' 00"S

Central Meridian: 166° 10' 00" E

Latitude of Origin: 78° 01' 16.211" S

Spheroid: WGS84. Positional accuracy of original orthophotograph at 1:10,000 is ±5.0 m (horizontal) and ±5.0 m (vertical) with an on-ground pixel resolution of 2-m. Photography: USGS/DoSLI (SN7847) 16 November 1993.

Inset: Ross Island, showing the location of McMurdo Station (US) and Scott Base (NZ), and the location of other nearby protected areas on Ross Island (Arrival Heights, ASPA No. 122, Cape Crozier, ASPA No. 124, Tramway Ridge, ASPA No. 130, and New College Valley, ASPA No. 116 at Cape Bird)



Map B: Cape Royds terrestrial area topographic map. Specifications are the same as those described in Map A. Contours are derived from the digital elevation model used to generate the orthophotograph.

## **6 Description of the Area**

### *6(i) Geographical coordinates, boundary markers and natural features*

Cape Royds (166°09'56" E, 77°33'20"S) is situated on the west side of Ross Island, McMurdo Sound, at the western extremity of a coastal strip of ice-free land approximately 8 km wide, on the west slope of Mount Erebus. The Area comprises both a terrestrial and marine component.

The marine component of the Area extends for approximately 5 km from Derrick Point in the south to Rocky Point in the north, including Horseshoe Bay. The marine boundary is defined as extending NE along the Arrival Bay coastline from the most easterly corner of the terrestrial boundary at Arrival Bay (166°10'06" E, 77°33'15.9"S) to Derrick Point (166°10'22" E, 77°33'14.1"S). From Derrick Point the marine boundary extends offshore 500 m in a SE direction and thence extends parallel to the coast 500 m offshore from the mean high water mark, around Cape Royds and north for 5.3 km to a point 500 m due north of Rocky Point then due south to Rocky Point.

The terrestrial component of the Area consists of ice-free land within approximately 350 m of Cape Royds itself (166°09'56" E, 77°33'20"S). Much of this land is seasonally occupied by a breeding Adelie penguin colony. The boundary of this part of the Area has been revised from the original description so as to include all of the area occupied by breeding penguins in 1995/96 and the main southern access route of the penguins to the sea. The north boundary of the territorial component of the Area extends 45 m from a small embayment on the west side and 350 m north of Cape Royds, in a straight line NE to a survey mark identified on earlier New Zealand maps as IT2 (166°09'33.3" E, 77°33'11.1"S), which is an iron tube embedded in the ground. This line extends 10 m east from IT2 to a signpost (166°09'34.8" E, 77°33'11.1"S), then a further 80 m east to a signpost (166°09'46.1" E, 77°33'11.0"S) at the south end of a small pond at the north end of Pony Lake. From this signpost the boundary extends in a SE direction for 114 m just north of the lake to the eastern edge of the lake (166°10'01.3" E, 77°33'12.6"S). The east boundary then extends 86 m in a SSE direction to a third signpost (166°10'05" E, 77°33'15.2"S), thence to the coast on the east side of Arrival Bay (166°10'06.0" E, 77°33'15.9"S). All of the ice-free ground, snow-patches and freshwater bodies contained west and south of the line defined above to the coast extending around Cape Royds is included within the Area. The terrestrial component of the Area comprises terrain of irregular lava flows, volcanic gravels and dark reddish scoria, with a low 3-m cliff face on the seaward side. Much of the Area is covered with thick deposits of guano and bird remains.

The Area contains the world's most southerly established Adelie penguin colony, with annual population numbers currently fluctuating between 2,500 and 4,500 breeding pairs during the approximate mid-October to mid-February occupation. The population size in 1959 was deemed to be equivalent to that in 1910 but then dropped somewhat, to fewer

than 1,000 breeding pairs in 1963, as a result of severe ice conditions which made the colony more susceptible to disturbance by visitation and helicopter movements. Following visitor restrictions and relocation of the helicopter pad away from the colony, as well as a shift in climate beginning in the late 1970s, numbers have gradually recovered, with the population in 1998 numbering 4,000 pairs. The Area has been monitored regularly since 1965 and has been photographed from the air during the incubation phase of breeding annually since 1981.

The marine component of the Area has neither been intensively studied nor fully described. To 500 m west of the shore the sea floor generally drops off steeply down to several hundred meters. The bottom has not been surveyed fully, but samples show that it consists of coarse volcanic gravels and small to large boulders, with some submarine cliffs, in the area approximately 100 m offshore from Coast Lake. Research on the Nototheniid fish population and structure in this region suggests it is very abundant for fish, which have not been subjected to a level of sampling that has occurred close to Hut Point further to the south on Ross Island. A series of surveys between 1978–81 suggested that *Trematomus bernacchii* was the most common fish. The survey also recorded the presence of *Trematomus hansonii*, *T. centronotus*, *T. nicolai* and *Gymnodraco acuticeps*. The surveys also identified the presence of invertebrates such as echinoids, asteroids (e.g. *Odontaster validus*), ophiuroids, pycnogonids (e.g. *Pentanympyon antarcticum*, *Colossendeis robusta*), pteropods, copepods, amphipods, isopods, hirudinea, bryozoa, polychaetes, ctenophores, mollusca, and medusae.

The coastal region between Arrival Bay and Green Lake is the main access route for birds traveling to and from the nesting site, often over the sea ice that can extend up to 40 km from the colony during the breeding season. When ice-free, the near-shore marine area is likely to be an important feeding ground for the birds, and as such may be considered an integral part of the Cape Royds ecosystem.

*6(ii) Restricted and managed zones within the Area*

None.

*6(iii) Structures within and near the Area*

Shackleton's Hut (Historic Monument No. 15 and ASPA No. 157) (166°10'06.4" E, 77°33'10.7"S) is situated approximately 70 m from the NE boundary sign of the terrestrial component of the Area, 100 m northeast of which is a small research shelter (New Zealand) (166°10'10.6" E, 77°33'07.5"S). Two survey markers are present within the Area — marker IT2 is on the north boundary of the terrestrial part of the Area and is described above, while marker IT3 (166°09'52.7" E, 77°33'19.7"S) (also an iron tube embedded in the ground) is 64 m SW of Flagstaff Hill. Relics at the site of a small depot from the time of Shackleton's voyages are present in a small embayment on the west side of the penguin nesting area (166°09'35.2" E, 77°33'14.3"S: Map B). The depot should not be disturbed except by permit for conservation or management purposes.



*6(iv) Location of other protected areas within close proximity of the Area*

The nearest protected areas to Cape Royds are Backdoor Bay (ASPANo. 157) adjacent to the Area, Cape Evans (ASPANo. 155) 10 km to the south, Tramway Ridge (ASPANo. 130) close to the summit of Mt. Erebus situated 20 km east, and New College Valley (ASPANo. 116) 35 km to the north at Cape Bird, and Arrival Heights (ASPANo. 122) which is adjacent to McMurdo Station 35 km to the south. Cape Crozier (ASPANo. 124) is 75 km to the east on Ross Island.

## **7 Permit conditions**

Entry into the Area is prohibited except in accordance with a permit issued by an appropriate national authority. Conditions for issuing a permit to enter the area are that:

- it is issued for scientific reasons or for essential management purposes consistent with plan objectives such as inspection or review;
- the actions permitted will not jeopardize the ecological or scientific values of the Area and support of the objectives of the management plan;
- the permit, or an copy, shall be carried within the Area;
- a report or reports shall be supplied to the authority or authorities named in the permit;
- permits should be valid for a stated period.

*7(i) Access to and movement within the Area*

Within the terrestrial part of the Area access shall be on foot and vehicles are prohibited. Within the marine part of the Area, access should be by foot or vehicle when sea-ice is present, or by ship or small boat during open water periods. Access into the Area should be from the direction of the helicopter pads, and if arriving over the sea ice or by boat, then access should be from the embayment below and east of the helicopter pads on the NW shore of Backdoor Bay (see Maps A and B). Access to ASPANo. 157, including Shackelton's Hut, is by permit only. Helicopters are prohibited from landing within the terrestrial part of the Area. Helicopters should land throughout the year at the Primary Pad (166°10'22.9" E, 77°33'03.5"S), 250 m northeast of the northern point of Pony Lake.

Overflight of the Area is prohibited by single-engine helicopters to altitudes lower than 750 m (~2,500 ft), by dual-engine helicopters lower than 1,000 m (~3,300 ft), by single or dual engine fixed-wing aircraft lower than 450 m (~1,500 ft), and by quadruple-engine fixed-wing aircraft lower than 1000 m (~3,300 ft), except when required for essential scientific or management purposes specifically authorized by permit. Minimum horizontal distance for aircraft approach is 500 m (~1600 ft) for single-engine helicopters, 750 m (~2,500 ft) for

dual-engine helicopters, 450 m (~1,500 ft) for single or dual engine fixed-wing engines, and 1000 m (~3,300 ft) for quadruple-engine fixed-wing aircraft. Use of helicopter smoke grenades is prohibited unless absolutely necessary for safety, and all grenades should be retrieved.

Foot traffic within the Area should be kept to the minimum necessary consistent with the objectives of any permitted activities. Permitted visitors should keep to the natural penguin access routes through the colony and not approach occupied nests except as required for scientific or management purposes. Access to the marine component of the Area should generally avoid the main seaward access routes used by the penguins, or be from outside of the terrestrial part of the Area.

*7(ii) Activities that are or may be conducted in the Area, including restrictions on time or place*

- Scientific research that will not jeopardize the ecosystem of the Area;
- Essential management activities, including monitoring and inspection.

*7(iii) Installation, modification or removal of structures*

No structures are to be erected within the Area except as specified in a permit. All scientific equipment installed in the Area must be authorized by permit and clearly identified by country, name of the principal investigator and year of installation. All such items should be made of materials that pose minimal risk of contamination of the Area. Removal of specific equipment for which the permit has expired shall be a condition of the permit.

*7(iv) Location of field camps*

Camping within the terrestrial part of the Area is prohibited. A field camp site exists 175 m northeast of the Area adjacent to the New Zealand shelter. Camping within the marine part of the Area when sea ice is present is allowed by permit. Such camps should avoid the penguin approach routes within 200 m of the breeding colony, but are otherwise not restricted to a particular location.

*7(v) Restrictions on materials and organisms that can be brought into the Area*

No living animals, plant material or microorganisms shall be deliberately introduced into the Area and precautions should be taken against accidental introductions. No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for scientific or management purposes specified in the permit, shall be removed from the Area at or before the conclusion of the activity for which the permit was granted. Fuel is not to be stored in the Area, unless required for essential purposes connected with the activity for which the permit has been granted. Dressed poultry should be free of disease or infection before shipment to the Antarctic and, if introduced into the Area for food, all parts and waste of poultry shall be

completely removed from the Area and incinerated or boiled long enough to kill any potentially infective bacteria or viruses.

All materials introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of their introduction into the environment is minimized.

*7(vi) Taking or harmful interference with native flora or fauna*

Taking or harmful interference with native flora and fauna is prohibited, except in accordance with a permit issued under Article 3 of Annex II by the appropriate national authority specifically for that purpose. Where animal taking or harmful interference is involved, this should as a minimum standard be in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica.

*7(vii) Collection or removal of anything not brought into the Area by the permit holder*

Material may be collected or removed from the Area only in accordance with a permit and should be limited to the minimum necessary to meet scientific or management needs. Material of human origin likely to compromise the values of the Area, which was not brought into the Area by the permit holder or otherwise authorized, may be removed unless the impact of removal is likely to be greater than leaving the material *in situ*: if this is the case the appropriate authority should be notified.

Unless specifically authorized by permit, visitors are prohibited from interfering with or from handling, taking or damaging any historic artifacts found within the Area. Any new artifacts observed should be notified to the appropriate national authority. Relocation or removal of artifacts for the purposes of preservation, protection or to re-establish historical accuracy is allowable by permit.

*7(viii) Disposal of waste*

All wastes shall be removed from the Area.

*7(ix) Measures that are necessary to ensure that the aims and objectives of the management plan can continue to be met*

- Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities, which may involve the collection of small samples for analysis or audit, to erect or maintain signposts or for management activities.
- Any specific sites of long-term monitoring should be appropriately marked.
- To help maintain the ecological and scientific values of the isolation and relatively low level of human impact at the Area visitors shall take special precautions against introductions. Of particular concern are microbial and vegetation introductions from soils at other Antarctic sites, including stations, or from regions outside Antarctica. To minimize the risk of introductions, visitors shall thoroughly clean footwear and any

equipment to be used in the area – particularly sampling equipment and markers – before entering the Area.

*7(x) Requirements for reports*

Parties should ensure that the principal holder for each permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the visit report form suggested by SCAR. Parties should maintain a record of such activities and, in the Annual Exchange of Information, should provide summary descriptions of activities conducted by persons subject to their jurisdiction, which should be in sufficient detail to allow evaluation of the effectiveness of the management plan. Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be used both in any review of the management plan and in organizing the scientific use of the Area.